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"Welcome Shelter Near Trail's End"

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

MISSOURI and ARKANSAS DRAINAGE BASINS

APRIL 1, 1947

By

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

APR 22 1947
U. S. DEPARTMENT OF AGRICULTURE
DIVISION OF IRRIGATION

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.

WATER SUPPLY OUTLOOK

MISSOURI-ARKANSAS DRAINAGE BASINS

April 1, 1947

The water supply outlook for the Missouri River and its tributaries in Montana continues to be favorable. Snow is especially heavy near the Continental Divide and precipitation at medium elevations has been well above normal throughout the winter season. In Wyoming, the discharge of the various streams will be average or above. On the watershed of the Shoshone the water content of the snow is 27 percent above normal. Storage in Buffalo Bill Reservoir is 17 percent below last year. Snow cover on the Upper Big Horn and its tributaries ranges from average to 10 percent above. Along the Lower Big Horn in Wyoming there is a slight deficiency in snow. On the headwaters of the North Platte the snow cover is practically normal and soil moisture and range conditions are generally good. Reservoir storage is 7 percent under last year. In the South Platte drainage irrigation water supplies will be very satisfactory due to heavy snow in the mountains, as well as at lower elevations. Snow cover on the Arkansas River watershed is well above average and the summer flow should exceed 125 percent of normal.

Missouri River and Tributaries in Montana

The snow at the headwaters of the streams forming the Missouri River continues to be well above normal. Snow water content measured on the Jefferson River watershed is 30 percent above the 10-year average. On other tributaries it is estimated that the summer flow will be fifteen to fifty percent above average. The Yellowstone River and contributing streams in Montana now have an average snow water storage of 20 percent in excess of normal according to recent surveys. In March, and throughout the winter season, the precipitation in the upper valley areas has been in excess. Due to melting of low snow, recent stream flow has been heavy and in combination with ice jams has caused local floods. The April-September discharge into Fort Peck Reservoir is expected to exceed 5,000,000 acre-feet. There is considerable variation in reservoir filling, but in general, water in storage is about the same as last year.

Wyoming

Shoshone: Storage in the Buffalo Bill Reservoir is above the past ten-year average, but only 83 percent of April 1, 1946. The snow cover on the headwaters of the Shoshone River continues to be well above normal but the accumulation during the month of March has been negligible. The average snow water content measured on this watershed is 15 percent above that of a year ago. Precipitation in the Powell area has been subnormal but the soil moisture is good for spring farm work. Range and crop conditions are reported as fair.

Big Horn: On the Big Horn drainage as a whole the snowcover on April 1 was about 10 percent above last year. The best snow conditions are on the upper Wind River where the measured snow water content is about 30 percent above normal.

The summer discharge of the Popo Agie River may be expected to be slightly more than a year ago or near average. On the watershed of the Greybull River the snow at higher elevations is reported to be a little less than normal and above normal from 6,000 to 8,000 feet. The outlook for irrigation water supply on this stream is generally good. There is a definite deficiency of snow along the lower Big Horn on the west side of the Big Horn mountains. The soil is wet except on the Riverton project where the soil moisture is fair to good. Storage in Bull Lake and Pilot Butte Reservoirs now totals 86,000 acre-feet as compared to 70,000 on April 1, 1946.

Sweetwater: Snow conditions on the headwaters of the Sweetwater are still above normal and about the same as April 1st, 1946. Summer runoff from this stream will probably be slightly above average.

Cheyenne: Snow cover in the Black Hills is below average but considerably better than last year. Recent precipitation has been slightly deficient. Precipitation through the winter season has been very adequate, leaving the soil in the best condition for many years. Farm work on the Belle Fourche project has been delayed due to cold weather. Storage in Belle Fourche Reservoir is now 154,750 acre-feet, 10,000 above last year.

Powder: The snow water content measured by recent snow surveys is 50 percent above normal. The general outlook for spring and summer runoff is good.

Tongue: Snow at the Big Goose Ranger Station is 30 percent above average. The precipitation has been well above normal in the Sheridan area throughout the winter season. Range and soil moisture conditions are described as excellent.

North Platte: Snow at the Big Goose Ranger Station is 30 percent above average. The precipitation has been well above normal in the Sheridan area throughout the winter season. Range and soil moisture conditions are described as excellent.

North Platte: On the upper North Platte watershed the snow cover is now just above normal. There was little additional snow in the mountains southwest of Encampment during March. The accumulation of snow elsewhere on the watershed was near average. Precipitation on this drainage in Wyoming has been well above normal for the season. In western Nebraska there has been a deficiency in precipitation but soil moisture conditions are reported as good. The flow of this stream at Saratoga, Wyoming is expected to be in excess of last year or about 600,000 acre-feet for the April-September period. Storage in the four principal reservoirs in Wyoming is now 943,000 acre-feet as compared to 1,011,100 a year ago. In Kingsley and Sutherland Reservoirs there is now stored 1,260,000 acre-feet which is practically identical with April 1, 1946.

Laramie: On the headwaters of this stream the average water content of the snow is now 13 inches as compared to 11 inches last year. The summer discharge of this stream may be expected to be above normal. Storage in Wheatland reservoirs is now 42 percent of that last April. Soil moisture and crop conditions are reported as very good. Precipitation has been normal and stream flow is unusually high due to the melting of a general low snow cover a month ago.

South Platte River Basin

Cache la Poudre: Snow at the higher elevations on the Poudre River watershed is now well above normal and also more than last year. The watershed has been entirely snow covered several times during the season in contrast to last year when the ground was bare at low elevations. Reservoir storage is about the same as a year ago. Soil moisture and crop conditions are good.

Big Thompson: The general prospect for water supply on the Big Thompson is now unusually good. The snow water content is 22 percent over normal and 38 percent over April first last year. At medium elevations the snow cover is well above average. Precipitation, stream flow and soil moisture are all above normal. Reservoir storage is a little under last year at this time.

St. Vrain: The water content of the snow on the Wild Basin course is now 16 inches as compared to 11 inches on April 1, last year. Snow cover at medium elevations is well above normal. The discharge of this stream during the summer period should be high and extend over a long period. Precipitation, stream flow and soil moisture are in excess of normal.

Boulder Creek: On the headwaters of the Boulder Creeks the snow water content is 35 percent above last year and likewise the 10-year average. The water content at the East Portal of Moffat Tunnel is 7.8 inches which is 50 percent higher than any measurement since 1936 on this date. Reservoir storage is slightly under that of a year ago. Precipitation in the valley areas has been above normal. Soil moisture and crop conditions are good.

Clear Creek: The snow cover on the headwaters of Clear Creek is also well above average and much better than it was a year ago. Precipitation has been above normal through the winter season. Soil moisture and crop conditions are reported as excellent.

South Platte above Denver: Storage in reservoirs in South Park is now about 168,000 acre-feet. On April 1, 1946 it was 193,000. The water content of snow at higher elevations has increased an average of 2 inches during the past month to 7.6. Precipitation has been above normal. Due to rains and snow melt the flow of the river at Denver has been high. The outlook for the 1947 season is good.

In the lower South Platte valley in Colorado the prospects for adequate water supplies are favorable. In the Fort Lupton and Fort Morgan areas the soil moisture and crop conditions are excellent. Reservoir storage on the whole is about the same as last year. In the vicinity of Sterling the precipitation is about normal but soil moisture and crop conditions are only fair. Storage in the principal reservoirs in this district is 121,000 acre-feet, which is almost identical with April 1st, 1946.

Arkansas River

The general outlook for irrigation water supply in the Arkansas Valley is much better than a year ago. The average snow water content at higher elevations is 47 percent above last year and 6 percent above normal. Precipitation in the valley areas during March has been about average. Snow cover in the early winter, as well as later, has left the soil moisture in the valley and plains area in excellent condition. The flow of the Arkansas River at Salida is expected to be near 425,000 acre-feet for the April-September period. The flow of the Purgatoire River will be about normal. Reservoir storage is generally under last year. In the Great Plains reservoirs there is now in storage 77,600 acre-feet as compared to 106,600 on April 1, 1946.

MISSOURI-ARKANSAS DRAINAGE BASINS

STREAM FLOW FORECASTS, April 1, 1947

| Basin and Stream | Apr.-Sept., incl., Streamflow Thousands Acre Feet | | | | |
|----------------------------------|--|-----------------|---------|---------|-------------------------|
| | Forecast 1947 | Measured Runoff | | | 10-yr.avg. 1936-1945 |
| | | 1946 | 1945 | 1944 | |
| <u>YELLOWSTONE</u> | | | | | |
| Shoshone below Buffalo Bill Res. | 875,000 | --- | 436,000 | 578,000 | 655,000 |
| Wind River at Riverton | 550,000 | 352,000 | 520,000 | 577,000 | 480,000 |
| Popo Agie at Riverton | 380,000 | 333,000 | 423,000 | 483,000 | 393,000 |
| <u>NORTH PLATTE</u> | | | | | |
| Sweetwater at Alcova | 55,000 | 49,000 | -- | 81,000 | 52,000 |
| North Platte at Saratoga | 600,000 | 510,000 | 841,600 | 441,700 | 585,000 |
| Laramie at Jelm | 105,000 | 91,840 | 100,660 | 66,300 | 86,000 |
| <u>SOUTH PLATTE</u> | | | | | |
| Poudre at Canon | 285,000 | 200,000 | 253,000 | 211,000 | 245,000 |
| Big Thompson at Drake | 135,000 | 67,000 | 136,000 | 101,000 | 110,000 |
| St. Vrain at Lyons | 115,000 | 52,000 | 88,000 | 79,000 | 84,000 |
| Boulder at Orodell | 65,000 | 41,000 | 51,000 | 52,000 | 53,000 |
| Clear Creek at Golden | 180,000 | -- | 143,000 | 139,000 | 143,000 |
| <u>ARKANSAS</u> | | | | | |
| Arkansas at Salida | 425,000 | 326,000 | 316,000 | 324,000 | 334,000 |
| Purgatoire at Trinidad | 65,000 | --- | --- | 81,660 | 65,000 |

STATUS OF RESERVOIR STORAGE, MISSOURI-ARKANSAS BASIN, April 1, 1947

| BASIN AND STREAM | RESERVOIR | USABLE CAPACITY (Thous. A.F.) | THOUSANDS ACRE FEET IN STORAGE ABOUT April 1 | | | | | 10-year-Avg.* 1936-45 |
|--------------------|---------------------|--|--|---------|--------|---------|--------|--------------------------|
| | | | 1947 | 1946 | 1945 | 1944 | 1943 | |
| MISSOURI RIVER | | | | | | | | |
| Missouri River | Fort Peck | 19000.0 | 14980.0 | 13270.0 | 1124.2 | 10121.0 | 6368.0 | |
| " | Caron Ferry | 37.8 | 37.4 | 35.1 | 35.7 | 24.6 | 21.1 | |
| " | Hauser Lake | 52.7 | 47.9 | 47.9 | -- | 55.7 | 38.1 | |
| " | Holter | 73.6 | 66.0 | 79.0 | 77.8 | 37.5 | 48.2 | |
| " | Gibson | 105.0 | 58.6 | 68.8 | 63.6 | 71.3 | 58.8 | |
| " | Willow Creek | 32.4 | 15.3 | 11.2 | -- | 17.6 | 8.9 | |
| " | Pishkun | 32.0 | 17.2 | 22.8 | -- | 17.5 | 11.2 | |
| " | Four Horns | 20.0 | 10.7 | 5.5 | -- | 7.5 | 8.3 | |
| Marias River | Birch Creek | 30.0 | 26.3 | 96.0 | -- | 105.4 | 50.9 | |
| " | Lake Francis | 112.0 | 103.9 | 96.0 | -- | 105.4 | 42.3 | |
| " | Deadmans Basin | 52.5 | 47.0 | 47.0 | 51.0 | 50.6 | 45.4 | |
| Musselshell River | Martindale | 23.0 | 8.5 | 9.5 | 11.5 | 10.4 | 9.0 | |
| " | Cooney | 27.5 | -- | 7.2 | 11.2 | 8.5 | 15.0 | |
| Yellowstone River | Tongue River | 73.9 | 18.6 | -- | 10.5 | 20.9 | 12.6 | |
| Tongue River | Fresno | 127.2 | 136.7 | 61.8 | 54.4 | 71.8 | 48.7 | |
| Milk River | Nelson | 66.8 | 28.0 | 28.6 | 36.5 | 42.3 | 29.5 | |
| " | Sherburne | 66.0 | 25.1 | 24.1 | 22.4 | 12.4 | 14.8 | |
| St. Marys River | Mystic Lake | 20.8 | 8.9 | 9.3 | 8.6 | 5.5 | 5.3 | |
| Gallatin River | Madison | 41.0 | 37.7 | 38.3 | 34.3 | 27.1 | 25.4 | |
| Madison River | Hebgen | 345.0 | 220.2 | 179.6 | 229.3 | 232.9 | 188.9 | |
| " | Ruby | 39.0 | 38.8 | -- | 29.5 | 17.7 | 27.3 | |
| Jefferson River | Belle Fourche | 198.1 | 154.7 | 144.8 | 136.0 | 123.0 | 88.1 | |
| Cheyenne River | Buffalo Bill | 456.6 | 291.8 | 349.8 | 270.2 | 311.5 | 270.4 | |
| Shoshone River | Pilot Butte | 30.0 | 15.3 | 17.5 | 18.0 | 23.1 | 18.9 | |
| Wind River | Bull Lake | 155.0 | 69.5 | 48.6 | 85.1 | 77.7 | 53.0 | |
| " | Kingsley-Sutherland | 2180.0 | 1260.0 | 1267.8 | 830.1 | 786.0 | 343.8 | |
| North Platte River | Minatare | 60.8 | 23.9 | 32.0 | 19.8 | 12.7 | 19.1 | |
| " | Alcova | 190.0 | 84.2 | 37.6 | 26.0 | 73.3 | 65.0 | |
| " | Seminole | 1020.0 | 344.2 | 502.9 | 109.9 | 121.9 | 112.7 | |
| " | Guernsey | 46.1 | 36.7 | 46.9 | 42.2 | 37.2 | 37.0 | |
| " | Pathfinder | 1045.5 | 477.8 | 423.7 | 303.3 | 354.5 | 219.7 | |
| " | Wheatland | 70.4 | 24.4 | 58.0 | 16.4 | 34.4 | 21.8 | |
| Coramie River | | | | | | | | |

*Some for shorter periods

RESERVOIR STORAGE, Cont.

| BASIN AND STREAM | RESERVOIR | USABLE CAPACITY (Thous. A.F.) | THOUSANDS ACRE FEET IN STORAGE About April 1 | | | | |
|--------------------|-----------------|--|--|------|------|------|--------------------------|
| | | | 1947 | 1946 | 1945 | 1944 | 10-year Avg.* 1936-45 |
| MISSOURI RIVER | | | | | | | |
| Poudre River | Windsor | 18.6 | 11.7 | 12.3 | 9.6 | 12.6 | 10.5 |
| " | Cache la Poudre | 9.5 | 7.5 | 8.7 | 3.9 | 8.3 | 6.4 |
| " | Fossil Creek | 11.6 | 9.5 | 10.2 | 3.0 | 8.2 | 6.8 |
| " | Terry Lake | 8.2 | 4.1 | 4.3 | 4.1 | 4.3 | 4.4 |
| " | Halligan | 6.4 | 1.7 | 0.0 | 0.0 | 0.0 | 2.8 |
| " | Chamber's Lake | 8.8 | 2.7 | 2.3 | 1.7 | 1.9 | 2.8 |
| " | Cobb Lake | 34.3 | 0.6 | 4.4 | 8.4 | 8.4 | 3.7 |
| " | Black Hollow | 8.0 | 4.7 | 4.2 | 2.0 | 4.6 | 2.7 |
| Big Thompson River | Lake Loveland | 14.3 | 0.0 | 7.6 | 3.5 | 4.4 | 3.7 |
| " | Boyd Lake | 44.0 | 4.9 | 24.9 | 25.6 | 26.3 | 10.1 |
| " | Lone Tree | 9.2 | 8.5 | 6.7 | 2.5 | 2.0 | 5.5 |
| " | Mariano | 5.4 | 1.8 | 3.7 | 2.6 | 2.3 | 2.5 |
| St. Vrain River | Union | 12.7 | 6.7 | 9.2 | 5.5 | 6.9 | 5.7 |
| Boulder Creek | Barker Meadow | 11.7 | 0.0 | 0.0 | 0.2 | 3.9 | 2.8 |
| South Platte River | Eleven Mile | 81.9 | 81.9 | 81.9 | 81.9 | 81.9 | 58.6 |
| " | Cheeseman | 79.0 | 50.0 | 74.7 | 60.1 | 61.2 | 55.6 |
| " | Marston | 18.9 | 16.7 | 16.5 | 16.1 | 15.5 | 15.8 |
| " | Parr Lake | 32.2 | 28.2 | 26.4 | 18.1 | 21.0 | 16.4 |
| " | Milton | 24.4 | 19.8 | 15.6 | 8.7 | 7.3 | 8.6 |
| " | Standley | 18.5 | 12.0 | 17.5 | 11.7 | 9.4 | 12.3 |
| " | Marshall | 10.3 | 3.4 | 5.0 | 1.8 | 1.4 | 2.8 |
| " | Antero | 33.0 | 20.0 | 20.0 | 12.6 | 20.3 | 13.2 |
| " | Horse Creek | 20.6 | 12.5 | 12.0 | 9.5 | 6.6 | 6.8 |
| " | Riverside | 57.5 | 55.7 | 57.2 | 47.7 | 52.2 | 40.3 |
| " | Empire | 37.7 | 33.5 | 34.3 | 28.6 | 29.6 | 28.6 |
| " | Jackson Lake | 35.4 | 34.2 | 34.1 | 34.4 | 33.9 | 33.4 |
| " | Prewitt | 32.8 | 29.5 | 28.3 | 17.6 | 17.3 | 18.4 |
| " | Point of Rocks | 70.0 | 70.3 | 69.7 | 61.9 | 63.7 | 51.4 |
| " | Julesburg | 28.2 | 21.2 | 22.0 | 21.8 | 21.2 | 21.8 |

Some for shorter periods

*Some for shorter periods

RESERVOIR STORAGE, Cont.

| BASIN AND STREAM | RESERVOIR | USABLE CAPACITY (Thous. A.F.) | | | | | THOUSANDS ACRES FEET IN STORAGE About April 1 | |
|------------------|--------------|----------------------------------|-------|-------|------|------|---|----------|
| | | 1947 | 1946 | 1945 | 1944 | 1943 | 10-year Avg. | 1936-43* |
| ARKANSAS RIVER | | | | | | | | |
| Arkansas River | Twin Lakes | 57.9 | 40.1 | 17.0 | 28.7 | 23.1 | | |
| " | Sugar Loaf | 17.4 | 10.0 | 6.5 | 7.3 | 7.6 | | |
| " | Clear Creek | 11.4 | 8.7 | 8.0 | 2.3 | 3.6 | | |
| " | Meredith | 41.9 | 25.7 | 35.6 | 27.7 | 16.1 | | |
| " | Horse Creek | 26.9 | 18.0 | 15.4 | 0.0 | 7.5 | | |
| " | Adobe Creek | 61.6 | 47.9 | 35.0 | 28.2 | 19.2 | | |
| " | Cucharas | 40.0 | 5.4 | 10.0 | 0.9 | 7.9 | | |
| " | Two Buttes | 40.9 | 0.3 | -- | 0.0 | 15.4 | | |
| " | John Martin | 655.0 | 55.9 | 53.3 | 26.2 | 43.1 | | |
| " | Great Plains | 150.0 | 106.6 | 121.1 | 13.1 | 14.9 | | |
| Purgatoire River | Model** | 15.0 | 3.7 | 3.7 | 3.7 | 4.7 | | |

*Some for shorter periods.

**Resurveyed in 1946

SNOW SURVEYS AND IRRIGATION WATER FORECASTS FOR MISSOURI AND ARKANSAS RIVERS April 1, 1947

P R E C I P I T A T I O N D A T A

| WATERSHED | STATE | Precipitation October 1 to March 31 | Departure from Normal | Precipitation | Departure from Normal |
|--------------|-------------|---|-----------------------------|---------------|-----------------------------|
| | | Inches | Inches | March | Inches |
| Missouri | East. Mont. | 4.20 | +0.51 | 0.61 | -0.19 |
| Missouri | Cent. Mont. | 6.09 | +1.51 | 1.00 | +0.14 |
| Missouri | North Wyo. | 9.47 | +1.04 | 1.75 | +0.14 |
| North Platte | Wyoming | 5.94 | +0.51 | 1.18 | -0.01 |
| South Platte | Colorado | 9.43 | +4.18 | 1.18 | -0.17 |
| Arkansas | Colorado | 7.44 | +1.86 | 1.15 | -0.23 |

March precipitation was below normal except on the Missouri in Northern Wyoming and the Missouri in Montana. Seasonal precipitation is above normal in all cases.

*March precipitation tentative

SUMMARY OF APRIL 1 SNOW SURVEYS AND COMPARISON OF DATA
WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

| WATERSHEDS | Snow Depth | | | Water Content | | | Number Courses in Average | Snow Density | | | 1947 Water Content in Percent of | |
|--------------------|-------------------------|------|------|-------------------------|------|------|------------------------------------|-------------------------|---------|---------|-------------------------------------|------|
| | 1946 | | 1947 | 1946 | | 1947 | | 1946 | | 1947 | Twelve year Avg.* | 1946 |
| | Twelve Year Avg.* | In. | In. | Twelve Year Avg.* | In. | In. | | Twelve Year Avg.* | Percent | Percent | | |
| MISSOURI RIVER | In. | In. | In. | In. | In. | In. | | Percent | Percent | | | |
| Jefferson River | 31.2 | 36.7 | 35.7 | 9.6 | 10.5 | 12.4 | 8 | 30 | 29 | 34 | 129 | 118 |
| Madison River | 39.9 | 45.9 | 41.9 | 12.8 | 15.8 | 13.4 | 4 | 32 | 34 | 32 | 105 | 85 |
| Gallatin River | 43.3 | 40.0 | 48.7 | 11.7 | 14.4 | 13.6 | 5 | 27 | 36 | 28 | 116 | 94 |
| Musselshell River | -- | 15.4 | -- | -- | 3.4 | | | | | | | |
| Missouri River** | 32.4 | 25.2 | 40.5 | 8.9 | 8.7 | 12.3 | 9 | 27 | 35 | 30 | 138 | 142 |
| Marias River | 41.9 | 44.6 | 60.8 | 15.2 | 17.7 | 23.3 | 1 | 36 | 40 | 38 | 153 | 132 |
| Yellowstone River | 36.6 | 39.4 | 42.9 | 10.3 | 11.1 | 12.6 | 5 | 28 | 28 | 30 | 122 | 113 |
| Milk River | 16.9 | 16.7 | 18.0 | 5.4 | 4.5 | 5.6 | 1 | 32 | 27 | 31 | 104 | 124 |
| Shoshone River | 51.8 | 54.5 | 62.1 | 16.3 | 18.0 | 20.8 | 2 | 31 | 33 | 33 | 127 | 115 |
| Bighorn River | 36.3 | 37.2 | 39.9 | 10.4 | 10.9 | 11.9 | 11 | 29 | 29 | 30 | 114 | 109 |
| Tongue River | 16.4 | 17.3 | 18.0 | 4.0 | 5.9 | 5.3 | 1 | 25 | 34 | 29 | 133 | 90 |
| Powder River | 21.8 | 26.6 | 30.2 | 6.2 | 7.2 | 9.3 | 2 | 31 | 27 | 31 | 150 | 129 |
| North Platte River | 52.4 | 51.3 | 56.9 | 18.0 | 16.9 | 18.3 | 11 | 34 | 33 | 32 | 102 | 108 |
| Sweetwater River | 34.3 | 43.8 | 43.6 | 11.5 | 13.4 | 13.4 | 2 | 34 | 30 | 30 | 116 | 100 |
| Laramie River | 39.6 | 35.6 | 42.4 | 11.8 | 11.0 | 13.1 | 8 | 30 | 31 | 31 | 111 | 119 |
| Cheyenne River | 25.1 | 10.9 | 23.2 | 6.2 | 2.7 | 5.3 | 1 | 25 | 25 | 23 | 85 | 196 |
| Crow Creek | 16.2 | 13.0 | 22.0 | 4.6 | 3.6 | 7.1 | 1 | 28 | 28 | 32 | 155 | 197 |
| South Platte *** | 22.7 | 20.3 | 28.9 | 6.0 | 5.2 | 7.6 | 3 | 26 | 26 | 26 | 127 | 146 |
| Poudre River | 39.5 | 38.1 | 44.9 | 12.1 | 12.8 | 14.0 | 6 | 31 | 33 | 31 | 115 | 110 |
| Big Thompson River | 50.5 | 42.4 | 60.9 | 15.4 | 13.6 | 18.7 | 2 | 30 | 32 | 31 | 122 | 138 |
| St. Vrain River | 43.9 | 34.3 | 49.8 | 13.2 | 10.8 | 15.8 | 1 | 30 | 31 | 32 | 120 | 146 |
| Boulder Creek | 35.4 | 29.0 | 48.6 | 11.8 | 12.0 | 16.6 | 2 | 33 | 41 | 34 | 140 | 138 |
| Clear Creek | 50.6 | 45.5 | 61.0 | 15.4 | 14.5 | 19.4 | 2 | 30 | 32 | 32 | 126 | 134 |
| ARKANSAS RIVER | 35.0 | 26.6 | 36.1 | 10.0 | 7.2 | 10.6 | 10 | 28 | 27 | 30 | 106 | 147 |

*Some for shorter periods.

**Between Helena and Great Falls

***Above Denver, Colo.

MISSOURI-ARKANSAS RIVERS SNOW SURVEYS, April 1, 1947

| DRAINAGE BASIN and SNOW COURSE | LOCATION | | | SNOW COURSE MEASUREMENTS | | | | | | Past Record Av. Water Content (Inches) |
|--------------------------------------|---------------------|----------------------|-------|-------------------------------|---------------------------|------------------------|------|------|-----------------------|---|
| | No. and State | Sec. Twp. Range | Elev. | Date of Survey (Inches) | Snow Depth (Inches) | Water Content (Inches) | | | Years of Record | |
| | | | | | | 1947 | 1946 | 1945 | | |
| MISSOURI RIVER | | | | | | | | | | |
| JEFFERSON RIVER | | | | | | | | | | |
| Camp Creek* | 6 Ida | 21 13N 36E | 6800 | 3/31 | 20.1 | 6.1 | 10.2 | 9.1 | 12 | 8.5 |
| Moose Creek* | 7 " | 27 27N 21E | 6200 | 3/30 | 50.0 | 20.4 | 16.8 | 13.6 | 10 | 14.0 |
| East Fork R.S. | 7 Mont | 16 2N 17W | 5400 | 3/31 | 17.2 | 5.5 | 3.0 | 3.6 | 9 | 3.7 |
| Gibbons Pass | 10 " | 2S 19W | 7100 | 3/31 | 67.6 | 26.7 | 25.4 | 16.5 | 9 | 20.7 |
| Pipestone Pass | 30 " | 11 1N 7W | 7200 | 4/2 | 23.0 | 7.0 | 5.7 | 5.1 | 9 | 5.3 |
| Elkhorn Hot Spg | " | 15 4S 12W | 8450 | 3/29 | 36.3 | 11.1 | 9.9 | 6.0 | 9 | 8.3 |
| Picnic Grounds | " | 22 5N 6W | 6500 | 3/31 | 15.5 | 4.4 | 2.4 | 2.1 | 3 | 3.0 |
| Dell | " | 8 13S 9W | 6100 | | | | | | | |
| Dicky Bridge | " | 11 1N 12W | 5700 | | | | | | | |
| Stormlake | " | 19 4N 13W | 8100 | 3/31 | 56.0 | 17.6 | 10.8 | 10.3 | 8 | 13.6 |
| | | Average for drainage | | | 35.7 | 12.4 | 10.5 | 8.3 | | 9.6 |
| MADISON RIVER | | | | | | | | | | |
| Aster Creek* | 2 Wyo. | 44.3N 110.6W | 7700 | 3/17 | 92.0 | 35.3 | -- | 19.2 | 11 | 27.4 |
| Lewis L. Divide* | 8 " | 44.2N 110.7W | 7900 | 3/17 | 119.6 | 47.9 | -- | 29.9 | 11 | 38.7 |
| Norris Basin | 11 " | 44.3N 110.7W | 7500 | | 35.0 | 8.8 | -- | 7.6 | | -- |
| Big Springs* | 3 Ida. | 14N 44E | 6500 | 3/28 | 58.0 | 20.7 | -- | 16.4 | 9 | 18.6 |
| West Yellowstone | 16 Mont. | 34 13S 5E | 6700 | 3/30 | 34.8 | 10.4 | 12.6 | 7.3 | 11 | 10.6 |
| Twenty-one Mile* | " | 1 11S 5E | 7150 | 3/30 | 54.0 | 17.8 | 20.0 | 10.0 | 11 | 15.6 |
| Hebgen Dam | " | 22 11S 3E | 6550 | 3/30 | 32.8 | 11.0 | 15.3 | 8.2 | 11 | 11.6 |
| Valley View | Idaho | 7 15N 44E | 6500 | 3/28 | 46.0 | 14.3 | 15.5 | 10.1 | 11 | 13.4 |
| | | Average for drainage | | | 41.9 | 13.5 | 15.7 | 8.9 | | 12.8 |
| GALLATIN RIVER | | | | | | | | | | |
| Devil's Slide | Mont. | 14 5S 6E | 8100 | 3/29 | 76.3 | 22.6 | 24.2 | 15.1 | 8 | 18.9 |
| Hood Meadow Extn. | " | 22 4S 6E | 6600 | 3/28 | 36.4 | 10.8 | 8.4 | 6.2 | 8 | 7.6 |
| Mystic Lake No. 1 | " | 31 3S 7E | 6600 | | -- | -- | 8.5 | 8.2 | | |
| Mystic Lake No. 2 | " | 31 3S 7E | 6600 | | -- | -- | 7.7 | 6.7 | | |
| Twenty-one Mile | " | 1 11S 5E | 7150 | 3/30 | 54.0 | 17.8 | 20.0 | 10.0 | 11 | 15.6 |
| Ross Peak | " | 10 1N 6E | 7000 | 4/1 | 27.1 | 7.4 | 9.6 | 5.5 | 7 | 6.7 |
| New World Trail | " | 13 3S 6E | 7000 | 4/5 | 49.7 | 9.2 | 9.8 | 8.6 | 6 | 9.6 |
| | | Average for drainage | | | 48.7 | 13.6 | 14.4 | 9.1 | | 11.7 |
| WISSELSHELL RIVER | | | | | | | | | | |
| Masshopper* | Mont. | 19 9N 8E | 7000 | | | | 3.6 | 2.9 | | |
| Orville Harris | " | 31 10N 9E | 6500 | | | | 3.1 | 4.0 | | |
| | | Average for drainage | | | | | 3.4 | 3.4 | | |
| *Adjacent drainage | | | | | | | | | | |

*Adjacent drainage

| DRAINAGE BASIN and SNOW COURSE | LOCATION | | | | SNOW COURSE MEASUREMENTS | | | | | |
|--------------------------------------|---------------------|-----------|----------------------|-------|-------------------------------|---------------------------|------------------------|------|-----------------------|---|
| | No. and State | Sec. Twp. | Range | Elev. | Date of Survey (Inches) | Snow Depth (Inches) | Water Content (Inches) | | Years of Record | Past Record Av. Water Content (Inches) |
| | | | | | | | 1947 | 1946 | | |
| MISSOURI RIVER** | | | | | MISSOURI RIVER | | | | | |
| Chessman Res. | 6 Mont. | 2 | 8N 6W | 6200 | 4/1 | 15.3 | 4.7 | 2.4 | 11 | 4.1 |
| Goat Mountain | 11 " | 45.5N | 112.9W | 7000 | 4/2 | 45.3 | 17.8 | 9.9 | 9 | 8.6 |
| Stemple Pass | 36 " | 13N | 7W | 6900 | 3/31 | 43.0 | 13.0 | 8.6 | 9 | 8.6 |
| Lower Rimini | 41 " | 8N | 6W | 6250 | 4/2 | 28.4 | 7.8 | 3.8 | 11 | 5.6 |
| Middle Rimini | 42 " | 8N | 6W | 6800 | 4/2 | 47.5 | 14.2 | 7.9 | 11 | 9.5 |
| Upper Rimini | 43 " | 8N | 5W | 8000 | 4/2 | 56.0 | 17.5 | 10.8 | 11 | 12.4 |
| Grasshopper | 27 " | 19 | 8E | 7000 | | | | 3.6 | | |
| King's Hill | 25 " | 35 | 7E | 7950 | 3/31 | 54.4 | 15.4 | 17.4 | 9 | 12.3 |
| Orville Harris* | 26 " | 31 | 9E | 6500 | | | | 3.1 | | |
| Half Moon | 23 " | 22 | 18E | 6000 | 3/29 | 30.2 | 8.3 | 7.2 | 7 | 7.6 |
| Crystal Lake | 24 " | 24 | 17E | 5500 | 4/1 | 44.7 | 11.9 | 10.8 | 7 | 11.4 |
| | | | Average for drainage | | | 40.5 | 12.3 | 8.7 | | 8.9 |
| MARIAS RIVER | | | | | | | | | | |
| Desert Mountain | 7 Mont. | 24 | 31N 19W | 5600 | | -- | -- | 15.3 | 11 | 15.2 |
| Marias Pass | 20 " | 48.3N | 113.4W | 5250 | 3/31 | 60.8 | 23.3 | 17.7 | | 15.2 |
| | | | Average for drainage | | | 60.8 | 23.3 | 17.7 | | |
| YELLOWSTONE RIVER | | | | | | | | | | |
| Lupine Creek | 40 Wyo. | 44.9N | 110.6W | 7300 | | 38.1 | 9.9 | -- | | 10.3 |
| Blacktail Deer Cr. | 41 " | 44.9N | 110.6W | 7500 | | 44.4 | 12.1 | -- | | 7.0 |
| Lodgepole | 43 " | 56N | 106W | 8200 | 3/31 | 39.0 | 11.2 | 12.8 | 10 | 9.7 |
| Camp Senia | 11 Mont. | 2 | 8S 18E | 7870 | 3/31 | 36.4 | 9.8 | -- | 8 | 6.9 |
| Canyon | 2 Wyo. | 44.7N | 110.5W | 7750 | 4/1 | 46.3 | 12.8 | -- | 10 | 9.8 |
| Cooke City | 10 Mont. | 25 | 9S 14E | 7400 | 3/31 | 33.1 | 8.3 | -- | 10 | 9.8 |
| Crevice Mtn. #1 | 5 " | 26 | 9S 9E | 8400 | 4/1 | 41.0 | 11.2 | 9.4 | 10 | 9.6 |
| Crevice Mtn. #2 | 6 " | 26 | 9S 9E | 8300 | 4/1 | 42.9 | 12.2 | 9.9 | 10 | 3.8 |
| Lake Camp | 7 Wyo. | 44.6N | 110.4W | 7850 | 4/3 | 41.1 | 12.3 | -- | 8 | 17.6 |
| Porcupine | 7 Mont. | 10 | 4N 10E | 6500 | 4/1 | 21.5 | 5.5 | 3.8 | 9 | 10.3 |
| Hell's Canyon | 8 " | 23 | 5S 12E | 6000 | | | | 3.3 | 7 | |
| Independence | 9 " | 22 | 7S 12E | 8000 | 4/3 | 70.3 | 22.7 | 21.5 | | |
| | | | Average for drainage | | | 42.9 | 12.6 | 11.5 | | |
| MILK RIVER | | | | | | | | | | |
| Rocky Boy | 22 Mont. | 15 | 82N 16E | -- | -- | 18.0 | 5.6 | 4.5 | 6 | 5.4 |

*Adjacent Drainage **Between Helena and Great Falls

SNOW COURSE MEASUREMENTS

LOCATION

| No. and State | | Sec. | Twp. | Range | Elev. | Date of Survey | Snow Depth (Inches) | Water Content (Inches) | | | Years or Record | Past Record Av. Water Content (Inches) |
|--------------------|--------------------|---------|----------------------|----------------------|-------|----------------|---------------------|------------------------|------|------|-----------------|--|
| MISSOURI RIVER | | | | | | | | | | | | |
| SHOSHONE RIVER | 32 Wyo. | 12 | 52N | 110W | 7100 | 3/31 | 49.7 | 15.0 | 12.7 | 12.1 | 10 | 12.9 |
| | 50 " | 23 | 44N | 110W | 9200 | 3/31 | 74.5 | 26.7 | 23.3 | 17.4 | 12 | 19.7 |
| | | | Average for Drainage | | | | 62.1 | 20.8 | 18.0 | 14.8 | | 16.3 |
| | BIG HORN RIVER | | | | | | | | | | | |
| | Togwotee Pass* | 12 Wyo. | 29 | 44N | 110W | 9600 | 3/31 | 86.5 | 33.3 | 28.8 | 12 | 26.8 |
| Tensleep R.S. | 13 " | 30 | 49N | 86W | 8300 | 4/1 | 35.2 | 5.6 | 7.5 | 7.3 | 11 | 6.7 |
| | 16 " | 32 | 53N | 88W | 8800 | 3/31 | 36.5 | 5.9 | 11.4 | 9.3 | 11 | 7.9 |
| | 45 " | 3 | 31N | 101W | 8500 | 3/28 | 13.5 | 4.5 | 4.1 | 3.6 | 8 | 5.4 |
| | 46 " | 23 | 31N | 101W | 9500 | 3/28 | 36.7 | 11.2 | 9.0 | 6.8 | 8 | 9.3 |
| | 47 " | 13 | 30N | 101W | 9000 | 3/27 | 44.5 | 13.9 | 13.8 | 10.1 | 8 | 11.8 |
| | 48 " | 28 | 46N | 103W | 8000 | 3/26 | 26.3 | 6.1 | 5.9 | 3.1 | 7 | 5.3 |
| | 49 " | 3 | 42N | 109W | 7500 | 3/31 | 26.6 | 8.0 | 4.4 | 6.1 | 12 | 6.0 |
| | 50 " | 23 | 44N | 110W | 9200 | 3/31 | 74.5 | 26.7 | 23.3 | 17.4 | 12 | 19.7 |
| | 51 " | 26 | 1N | 4W | 9000 | 3/31 | 20.3 | 4.9 | | | | |
| | 52 " | 23 | 28 | 3W | 9500 | | 28.3 | 7.1 | | | | |
| | Mosquito Park R.S. | 52 " | 27 | 42N | 108W | 8760 | 3/29 | 35.3 | 9.6 | 8.2 | 7 | 9.4 |
| | DuNoir | 53 " | 27 | 42N | 108W | 8760 | 3/29 | 35.3 | 9.6 | 8.2 | 7 | 9.4 |
| | T-Cross Ranch | 54 " | 1 | 43N | 107W | 8000 | 3/31 | 23.7 | 6.2 | 4.0 | | 6.4 |
| | | | | Average for drainage | | | | 39.9 | 11.9 | 10.9 | | 10.4 |
| | POWDER RIVER | | | | | | | | | | | |
| Red Fork | 30 Wyo. | 18 | 43N | 85W | 7500 | 4/2 | 31.8 | 8.5 | 9.6 | 6.2 | 11 | 6.9 |
| Sour Dough | 31 " | 17 | 49N | 84W | 8500 | 3/31 | 28.5 | 10.1 | 4.9 | 5.1 | 11 | 5.6 |
| | | | Average for drainage | | | | 30.2 | 9.3 | 7.2 | 5.7 | | 6.2 |
| TONGUE RIVER | | | | | | | | | | | | |
| Big Goose Cr. R.S. | 17 Wyo. | 4 | 53N | 86W | 7700 | 4/1 | 18.0 | 5.3 | 5.9 | 6.3 | 12 | 4.0 |
| SWEETWATER RIVER | | | | | | | | | | | | |
| Grannier Meadows | 29 Wyo. | 19 | 30N | 100W | 9000 | 3/27 | 42.6 | 12.8 | 13.1 | 10.2 | 11 | 11.2 |
| South Pass* | 47 " | 13 | 30N | 101W | 9000 | 3/27 | 44.5 | 13.9 | 13.8 | 10.1 | 8 | 11.8 |
| | | | Average for drainage | | | | 43.6 | 13.4 | 13.4 | 10.2 | | 11.5 |
| CHEYENNE RIVER | | | | | | | | | | | | |
| Upper Spearfish | 1 S. Dak. | 21 | 3N | 1E | 6500 | 4/1 | 23.2 | 5.3 | 2.7 | 7.6 | 4 | 6.2 |
| Upper Castle | 2 " | 24 | 2N | 1E | 6800 | | -- | -- | -- | 6.6 | | |
| Deerfield | 3 " | 23 | 1N | 2E | 6010 | 4/1 | 8.0 | 2.7 | -- | 2.4 | 3 | 3.8 |
| | | | Average for drainage | | | | 23.2 | 5.3 | 2.7 | 7.6 | | 6.2 |

*On Adjacent Drainage

MISSOURI-ARKANSAS RIVERS SNOW SURVEYS, April 1, 1947

| DRAINAGE BASIN and SNOW COURSE | LOCATION | | | SNOW COURSE MEASUREMENTS | | | | | | | |
|--------------------------------------|---------------------|------|----------------------|--------------------------|----------------------|---------------------------|------------------------|-----------------------|---|----|------|
| | No. and State | Sec. | Twp. Range | Elev. | Date of Survey | Snow Depth (Inches) | Water Content (Inches) | Years of Record | Past Record Av. Water Content (Inches) | | |
| MISSOURI RIVER | | | | | | | | | | | |
| NORTH PLATTE RIVER | | | | | | | | | | | |
| Cameron Pass | 1 Colo | 2 | 6N | 76W | 10300 | 3/31 | 70.8 | 23.2 | 19.2 | 12 | 20.7 |
| Park View | 7 " | 24 | 5N | 78W | 9200 | 4/1 | 38.9 | 10.8 | 7.8 | 12 | 10.0 |
| Columbine Lodge | 8 " | 21 | 5N | 82W | 9300 | 4/2 | 65.3 | 22.6 | 22.7 | 12 | 21.8 |
| Big Creek Lake | 51 " | 9 | 11N | 82W | 9000 | 3/26 | 39.2 | 11.8 | -- | 10 | 10.5 |
| Willow Cr. Pass* | 62 " | 1 | 4N | 78W | 9500 | 4/1 | 48.2 | 14.4 | 11.8 | 10 | 12.1 |
| Bottle CCreek | 7 Wyo. | 24 | 14N | 85W | 8200 | 4/2 | 33.7 | 11.0 | 16.9 | 12 | 13.7 |
| Webber Spring | 8 " | 27 | 14N | 85W | 9000 | 4/2 | 49.8 | 17.4 | 21.2 | 12 | 18.4 |
| Old Battle | 9 " | 29 | 14N | 85W | 9800 | 4/1 | 87.6 | 33.2 | 35.4 | 12 | 30.6 |
| N. French Creek | 37 " | 27 | 16N | 80W | 10200 | 3/27 | 88.9 | 28.2 | 33.1 | 10 | 29.8 |
| N. Barrett Creek #2 | 38 " | 30 | 16N | 80W | 9400 | 3/27 | 65.4 | 18.0 | 22.2 | 12 | 19.8 |
| Ryan Park #2 | 39 " | 34 | 16N | 81W | 8400 | 3/26 | 37.9 | 10.6 | 14.0 | 12 | 11.1 |
| | | | Average for drainage | | | | 56.9 | 18.3 | 20.4 | | 18.0 |
| LARAMIE RIVER | | | | | | | | | | | |
| Brooklyn Lake | 3 Wyo. | 11 | 16N | 79W | 10200 | 3/30 | 65.8 | 22.1 | 22.7 | 12 | 20.7 |
| Fox Park | 11 " | 21 | 13N | 78W | 9200 | 3/31 | 9.0 | 7.2 | 13.3 | 12 | 9.5 |
| Pole Mtn. #2* | 34 " | 35 | 15N | 72W | 8700 | 3/29 | 22.0 | 7.1 | 8.1 | 12 | 4.6 |
| Libby Lodge #2 | 35 " | 29 | 16N | 78W | 8700 | 3/31 | 31.4 | 9.5 | 11.4 | 12 | 8.4 |
| Hairpin Turn #2 | 36 " | 24 | 16N | 79W | 9500 | 3/31 | 37.4 | 11.0 | 11.9 | 12 | 10.5 |
| W. Port. G-P. T n. | 4 Colo. | 7 | 8N | 75W | 8600 | 3/30 | 29.6 | 8.3 | 10.5 | 12 | 9.1 |
| Deadman Hill* | 50 " | 26 | 10N | 75W | 10200 | 3/28 | 55.3 | 17.00 | 14.5 | 11 | 14.0 |
| Roach | 88 " | 5 | 10N | 77W | 9800 | 3/31 | 66.2 | 20.8 | 18.3 | 8 | 18.0 |
| | | | Average for drainage | | | | 42.4 | 13.1 | 13.8 | | 11.8 |
| CROW CREEK | | | | | | | | | | | |
| Pole Mtn. #2 | 34 Wyo. | 35 | 15N | 72W | 8700 | 3/29 | 22.0 | 7.1 | 8.1 | 12 | 4.6 |
| POUDRE RIVER | | | | | | | | | | | |
| Cameron Pass | 1 Colo. | 2 | 6N | 76W | 10300 | 3/31 | 70.8 | 23.2 | 19.2 | 12 | 20.7 |
| Chambers Lake | 2 " | 6 | 7N | 75W | 9000 | 3/29 | 26.3 | 8.4 | 8.2 | 12 | 7.6 |
| Big South | 3 " | 33 | 8N | 75W | 8600 | 3/29 | 12.1 | 4.0 | 3.5 | 12 | 2.5 |
| Deadman Hill | 50 " | 26 | 10N | 75W | 10200 | 3/28 | 55.3 | 17.0 | 14.5 | 11 | 14.0 |
| Lake Irene* | 65 " | 8 | 5N | 75W | 10600 | 3/30 | 71.8 | 23.2 | 17.8 | 10 | 19.9 |
| Hour Glass Lake | 68 " | 18 | 7N | 73W | 9500 | 3/30 | 33.4 | 8.5 | -- | 8 | 7.8 |
| | | | Average for drainage | | | | 44.9 | 14.0 | 12.6 | | 12.1 |
| *On adjacent drainage | | | | | | | | | | | |

*On adjacent drainage

MISSOURI-ARKANSAS RIVERS SNOW SURVEYS, April 1, 1947

| DRAINAGE BASIN and SNOW COURSE | | LOCATION | | | | SNOW COURSE MEASUREMENTS | | | | | | | | | |
|--------------------------------------|----------|----------------------|----------------------|--------|-------|--------------------------|----------------------|---------------------------|------------------------|------|------|-----------------------|---|--|--|
| | | No. and State | Sec. | Twp. | Range | Elev. | Date of Survey | Snow Depth (Inches) | Water Content (Inches) | | | Years of Record | Past Record Av. Water Content (Inches) | | |
| MISSOURI RIVER | | | | | | | | | | | | | | | |
| BIG THOMPSON RIVER Lake Irene* | 65 Colo. | 8 | 5N | 75W | 10600 | 3/30 | 71.8 | 23.2 | 19.4 | 17.8 | 10 | 19.9 | | | |
| | 95 " | 23 | 5N | 74W | 9550 | 3/30 | 50.0 | 14.3 | 7.8 | 10.5 | 7 | 10.8 | | | |
| | | | Average for drainage | | | | 60.9 | 18.7 | 13.6 | 14.2 | | 15.4 | | | |
| ST. VRAIN RIVER Wild Basin | 41 Colo. | 24 | 3N | 74W | 10000 | 3/31 | 49.8 | 15.8 | 10.8 | 13.0 | 12 | 13.2 | | | |
| BOULDER CREEK E. Port. Moffat T. | 5 Colo. | 2 | 2S | 74W | 9400 | 4/1 | 22.8 | 7.8 | 0.0 | 4.8 | 12 | 3.2 | | | |
| | 60 " | 28 | 1N | 73W | 10300 | 4/1 | 74.5 | 25.5 | 24.1 | 19.5 | 10 | 20.3 | | | |
| | | | Average for drainage | | | | 48.6 | 16.6 | 12.0 | 12.2 | | 11.8 | | | |
| CLEAR CREEK Loveland Pass #2 | 61 Colo. | 37 | 4S | 76W | 10100 | 4/1 | 56.5 | 17.4 | 11.4 | 13.3 | 12 | 13.4 | | | |
| | 97 " | 2 | 5S | 76W | 11250 | 4/2 | 65.5 | 21.3 | 17.6 | 15.3 | 6 | 17.4 | | | |
| | | | Average for drainage | | | | 61.0 | 19.4 | 14.5 | 14.3 | | 15.4 | | | |
| SOUTH PLATTE RIVER (Above Denver) | 14 Colo. | 13 | 8S | 78W | 11400 | 3/31 | 44.1 | 11.2 | 8.7 | 7.7 | 12 | 11.2 | | | |
| | 15 " | 33 | 9S | 77W | 10000 | 3/31 | T | T | 0.0 | T | 12 | 0.5 | | | |
| | 83 " | 14 | 7S | 76W | 10100 | 3/31 | 42.7 | 11.6 | 6.8 | 6.8 | 11 | 6.2 | | | |
| | | | Average for drainage | | | | 28.9 | 7.6 | 5.2 | 4.8 | | 6.0 | | | |
| ARKANSAS RIVER | | | | | | | | | | | | | | | |
| ARKANSAS RIVER Tennessee Pass | 19 Colo. | 21 | 8S | 80W | 10200 | 3/31 | 40.0 | 10.1 | 5.4 | 6.9 | 12 | 8.8 | | | |
| | 21 " | 22 | 11S | 82W | 10500 | 3/28 | 42.9 | 13.1 | 11.1 | 7.2 | 12 | 10.1 | | | |
| | 42 " | 24 | 48N | 6E | 10800 | 3/30 | 40.5 | 11.9 | 7.6 | 13.2 | 12 | 13.0 | | | |
| | 43 " | 19 | 48N | 7E | 10500 | 3/30 | 30.8 | 9.7 | 6.1 | 11.7 | 12 | 11.0 | | | |
| | 72 " | | 37.2N | 105.2W | 10300 | 3/31 | 16.7 | 5.6 | 1.6 | 7.2 | 11 | 6.7 | | | |
| | 74 " | 22 | 28S | 70W | 9300 | 4/1 | 25.2 | 8.2 | 4.9 | 11.4 | 12 | 7.8 | | | |
| | 78 " | 23 | 11S | 81W | 9700 | 3/31 | 21.2 | 5.0 | 1.0 | 1.5 | 12 | 2.9 | | | |
| | 79 " | 2 | 8S | 79W | 11400 | 4/1 | 66.0 | 17.3 | 15.4 | 12.5 | 12 | 15.8 | | | |
| | 81 " | 30 | 31S | 69W | 10000 | 4/2 | 24.2 | 8.3 | 7.0 | 9.1 | 10 | 6.4 | | | |
| | 92 " | 16 | 49N | 6E | 10500 | 3/31 | 54.0 | 17.1 | 12.4 | 17.1 | 7 | 17.2 | | | |
| | | Average for drainage | | | | 36.1 | 10.6 | 7.2 | 9.8 | | 10.0 | | | | |

*On adjacent drainage

The following organizations cooperate in the snow surveys and irrigation water supply forecasts for the Colorado, Missouri-Arkansas and Rio Grande watersheds by furnishing funds or services.

STATE

Colorado State Engineer
Wyoming State Engineer
Utah State Engineer
New Mexico State Engineer
Montana State Engineer
Nebraska State Engineer
Colorado Experiment Station
Colorado Extension Service
Montana Experiment Station
Utah Experiment Station

FEDERAL

Department of Agriculture
Forest Service
Soil Conservation Service
Department of Interior
Bureau of Reclamation
Indian Service
Geological Survey
National Park Service
Department of Commerce
Weather Bureau
War Department
Army Engineer Corps

PUBLIC UTILITIES

Colorado Public Service Company
Western Colorado Power Company
Montana Power Company
Denver and Rio Grande Western R. R. Company

MUNICIPALITIES

City of Bozeman
City of Denver
City of Boulder

WATER USERS ORGANIZATIONS

Poudre Valley Water Users' Association
Arkansas Valley Ditch Association
Colorado River Water Conservation District

IRRIGATION PROJECTS

Farmers Reservoir and Irrigation Company
San Luis Valley Irrigation District
Santa Maria Reservoir Company
Costilla Land Company
Uncompahgre Valley Water Users' Association
Wyoming Development Company
Goshen Irrigation District
Kendrick Project
Pathfinder Irrigation District
Salt River Valley Water Users' Association
San Carlos Irrigation and Drainage District
Twin Lakes Reservoir and Canal Company

Many other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

